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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ERIK L. WALDRON, GREGORY P. BLASCHE, PAUL BOHN,
ROBIN MARK ADRIAN DAWSON, WALTER FOLEY,
SAMUEL HARRISON, MATTHEW T. JAMULA,
JUHA-PEKKA J. LAINE, BENJAMIN F. LANE, SEAN McCLAIN,
FRANCIS J. ROGOMENTICH, STEPHEN P. SMITH, and
JOHN JAMES BOYLE

Appeal 2019-003539
Application 14/746,970
Technology Center 2400

Before ST. JOHN COURTENAY III, JAMES W. DEJMEK, and
JASON M. REPKO, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's Non-Final Rejection of claims 1–16, which constitute all the claims pending in this application. Claims 17–21 are canceled. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b). We reverse.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a) (2018). According to Appellant, the real party in interest is The Charles Stark Draper Laboratory, Inc. *See* Appeal Br. 2.

STATEMENT OF THE CASE²

Introduction

Embodiments of Appellant’s invention relate generally to “digital cameras and, more particularly, to digital cameras used for navigation.” (Spec. ¶ 11).

Independent Claim 1

1. A digital camera, comprising:
 - a monocentric lens having a focal length, an outer spherical surface and a center;
 - a plurality of pixelated optical sensor arrays, each pixelated optical sensor array having a plurality of pixels and being oriented toward the center of the monocentric lens and spaced apart from the outer spherical surface of the monocentric lens, such that the pixelated optical sensor array is disposed about the focal length of the monocentric lens from the center of the monocentric lens; and
 - a plurality of tubular baffles, one tubular baffle of the plurality of tubular baffles for each pixelated optical sensor array of the plurality of pixelated optical sensor arrays, the baffle being disposed between the outer spherical surface of the monocentric lens and the pixelated optical sensor array, the baffle corresponding to the pixelated optical sensor array and having a longitudinal axis normal to the baffle’s corresponding pixelated optical sensor array and extending through the center of the monocentric lens, the baffle enclosing a light path volume through which light passes optically unaltered while blocking zeroth-order stray light paths, and, the baffle being disposed such that only light that enters and exits the monocentric lens via the outer spherical surface, without internally reflecting off any

² We herein refer to the Non-Final Office Action, mailed June 12, 2018 (“Non-Final Act.”); Appeal Brief, filed December 10, 2018 (“Appeal Br.”); the Examiner’s Answer, mailed January 30, 2019 (“Ans.”); and the Reply Brief, filed March 26, 2019 (“Reply Br.”).

planar surface of the monocentric lens, enters the baffle.
 Appeal Br. 14, CLAIMS APPENDIX.

Evidence

The prior art relied upon by the Examiner as evidence:

Name	Reference	Date
Moustakas	4,285,762	Aug. 25, 1981
Blanding et al. ("Blanding")	4,557,798	Dec. 10, 1985
Jungwirth et al. ("Jungwirth")	5,012,081	Apr. 30, 1991
Sitter, Jr. et al. ("Sitter")	5,680,252	Oct. 21, 1997
Stam et al. ("Stam")	6,049,171	Apr. 11, 2000
Jackson	6,462,889 B1	Oct. 8, 2002
Chen et al. ("Chen")	US 2007/0115545 A1	May 24, 2007
Rossi et al. ("Rossi")	US 2011/0032409 A1	Feb. 10, 2011
Eiane et al. ("Eiane")	US 2011/0176214 A1	July 21, 2011
Marks et al. ("Marks")	US 2011/0211106 A1	Sept. 1, 2011
Sekine	US 2015/0109501 A1	Apr. 23, 2015
Kim	US 2016/0172393 A1	June 16, 2016
Monk et al.	US 2018/0081157 A1	Mar. 22, 2018

Rejections

Rej.	Claims Rejected	35 U.S.C. §	Reference(s)/Basis
A	1, 3, 4, 6, 11, 12, 14	103	Jungwirth, Marks, Monk
B	2	103	Jungwirth, Marks, Monk, Sekine, Rossi, Blanding
C	5	103	Jungwirth, Marks, Monk, Jackson
D	7	103	Jungwirth, Marks, Monk, Moustakas
E	8	103	Jungwirth, Marks, Monk, Sitter

F	9	103	Jungwirth, Marks, Monk, Eiane
G	10	103	Jungwirth, Marks, Monk, Stam
H	13	103	Jungwirth, Marks, Monk, Kim
I	15, 16	103	Jungwirth, Marks, Monk, Chen

ANALYSIS

Rejection A of Sole Independent Claim 1 under 35 U.S.C. § 103

We note at the outset that Appellant does not contest any specific limitations of independent claim 1 as not being taught or suggested by the cited combination of Jungwirth, Marks, and Monk. Instead, Appellant contends the Examiner has improperly combined the cited references to support Rejection A of claim 1.

To establish a prima facie case under 35 U.S.C. § 103, the Examiner must apply the *Graham* factors.³ In applying the *Graham* factors, the Examiner must provide evidence that teaches or suggests each claim limitation,⁴ and, (2) the Examiner must provide sufficient “articulated

³ Obviousness is a question of law with several underlying factual inquiries: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the field of the invention; and (4) objective considerations such as commercial success, long felt but unsolved need, and the failure of others. *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966); *see also KSR Int’l Co., v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007).

⁴ It is a fundamental requirement “that each and every claim limitation be found present in the combination of the prior art references before the [obviousness] analysis proceeds.” *Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1351 (Fed. Cir. 2008) (quoting *Abbott Labs. v. Sandoz, Inc.*, 500 F. Supp. 2d 846, 852 (N.D. Ill. 2007)); *In re Wilson*, 424 F.2d 1382, 1385, 496 (CCPA 1970) (“All words in a claim must be considered in judging

reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Regarding the requirement to provide an “articulated reasoning with some rational underpinning” (*id.*), the Examiner finds an artisan would have been motivated “to modify the strapdown stellar sensor and holographic lens [] of Jungwirth with the teaching of [the] monocentric lens[-]based multi-scale optical system[] and methods of use of Marks in order to [provide a] low cost of manufacturing by using [a] widely available planner sensor.” Non-Final Act. 5.

The Examiner further finds an artisan would have been motivated “to modify the strapdown stellar sensor and holographic lens [] of Jungwirth with the teaching of [a] digital portable microscope of Monk in order to obtain a clear image from a sensor that does not include stray lights due to the black baffle tube that is designed to reduce the stray light reaching the sensor as taught by Monk ([0045]).” Non-Final Act. 6.

Appellant disagrees, and contends:

The skilled person modifying the Jungwirth arrangement as suggested by the Examiner so as to include camera tubes as taught by Marks would do so for the reason provided [by] Marks — to reduce spherical and/or chromic aberrations caused by the primary lens — and hence would always include within the camera tubes secondary lens elements that optically adjust the enclosed light.

Appeal Br. 7.

the patentability of that claim against the prior art.” *See also* MPEP § 2143.03, 9th Edition, Revision 10.2019, last revised June 2020. (“all claim limitations must be considered” in an obviousness analysis).

Appellant further contends: “But there would be no teaching or suggestion to the skilled person from the teachings of Jungwirth and Marks of implementing a baffle as claimed in which the baffle encloses ‘a light path volume through which light passes optically unaltered while blocking zeroth-order stray light paths.’” Appeal Br. 7–8.

Appellant additionally contends:

But Marks teaches such an arrangement in conjunction with his uses of secondary lenses that optically alters that the light that passes through his baffles in order to deliver it in proper focus to the sensor array at the far end of his baffles to reduce spherical and/or chromic aberrations caused by the primary lens. See, e.g., para. [0014]. Monk does also teach use of a baffle for a microscope without interior optical structures, but neither Marks nor Monk provides any teaching to one of skill in the art that would suggest why it would be beneficial to modify Marks’ baffles to remove the interior optical structures, especially since that would defeat the purpose of the baffles as used in Marks to reduce spherical and/or chromic aberrations caused by the primary lens, which would not occur without the secondary lenses that are necessary in the Marks baffles.

Appeal Br. 9.

The Examiner disagrees with Appellant, and further explains the basis for the rejection in the Answer:

When the person having ordinary skill in the art with ordinary creativity sees the baffle in Mark, the person would immediately recognize the general purpose of the baffle[,] i.e., preventing stray lights simply because it is one of the inherent functions of a baffle to block light from unwanted directions. Therefore, using the baffle in Mark does not defeat[] the purpose of the baffle[,] but in contrary[,] the person uses it for the purpose of the baffle.

Ans. 21.

Based upon our review of the record, we find a preponderance of the evidence supports Appellant's argument that modifying "Marks' baffles to remove the interior optical structures . . . would defeat the purpose of the baffles as used in Marks to reduce spherical and/or chromic aberrations caused by the primary lens, which would not occur without the secondary lenses that are necessary in [] Marks' baffles." (Appeal Br. 9).

We particularly note that Figure 4 of Mark depicts four lenses (402, 404, 406, and 408) which are interior to tube 410 that would need to be removed to incorporate Monk's teaching of a black baffle tube 13 (Figure 6) to reduce the amount of stray light reaching the sensor. *See* Monk, paragraph 45: "In front of the sensor 12 a black baffle tube 13 may be fitted, to reduce the stray light reaching the sensor 12, and an objective lens 14." *See also* Monk, Figure 6, black baffle tube 13.

As argued by Appellant (Appeal Br. 9), we agree that such modification of Marks' imaging system with Monk's black baffle tube 13 would not reduce spherical and/or chromic aberrations caused by the primary lens, which is the basic principle of operation of Marks (*see e.g.*, Marks, Abstract; paragraph 14).

If the proposed modification of the prior art would change the basic principles of operation of the prior art being modified, the teachings of the references are insufficient to render the claims obvious. *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959).

Because we agree with Appellant that the Examiner's proposed modification of adding Monk's black baffle tube to Marks' imaging system would make no sense to an artisan because it would change Marks' principle of operation, we also agree with Appellant that "[i]mproper hindsight [was]

used to assemble the bits and pieces of the prior art references in order to assemble a hypothetical device within the scope of the claims.” (Reply Br. 1).

We note the Examiner “opened the door” to the new hindsight argument in the Reply Brief by finding in the Answer: “Appellant fails to show the motivation presented in the Office Action is solely gleaned from Appellant's disclosure.” Ans. 20–21.

On this record, we find a preponderance of the evidence supports Appellant’s argument that “the fundamental principles of the secondary references Marks and Monk are incompatible and the person of skill in the art would not even hypothetically attempt to combine their teachings in a single device.” (Reply Br. 1).

Accordingly, we are constrained on this record to reverse the Examiner’s Rejection A of sole independent claim 1. For the same reasons, we also reverse the Examiner’s Rejection A of associated dependent claims 3, 4, 6, 11, 12, and 14.

Rejections B–I of the Remaining Dependent Claims under § 103

In light of our reversal of rejection A of sole independent claim 1, for the same reasons, we also reverse rejections B–I of all remaining dependent claims, which variously and ultimately depend therefrom. On this record, the Examiner has not shown how the additionally cited secondary references overcome the aforementioned deficiencies of the base combination of Jungwirth, Marks, and Monk, as discussed above regarding claim 1.

CONCLUSION

The Examiner erred in rejecting claims 1–16 as being obvious under 35 U.S.C. § 103, over the cited combinations of references.

ADDITIONAL ISSUE

We note each dependent claim 2–16 in the claims appendix to the Appeal Brief inexplicably depends upon a non-existent “claim 0,” i.e., “A digital camera according to claim 0,” Appeal Br. 15–17. We presume this is a typographical error. This typographical error must be corrected by amendment prior to any consideration by the Examiner for allowance.

DECISION SUMMARY

Rej.	Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
A	1, 3, 4, 6, 11, 12, 14	103	Jungwirth, Marks, Monk		1, 3, 4, 6, 11, 12, 14
B	2	103	Jungwirth, Marks, Monk, Sekine, Rossi, Blanding		2
C	5	103	Jungwirth, Marks, Monk, Jackson		5
D	7	103	Jungwirth, Marks, Monk, Moustakas		7

Rej.	Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
E	8	103	Jungwirth, Marks, Monk, Sitter		8
F	9	103	Jungwirth, Marks, Monk, Eiane		9
G	10	103	Jungwirth, Marks, Monk, Stam		10
H	13	103	Jungwirth, Marks, Monk, Kim		13
I	15, 16	103	Jungwirth, Marks, Monk, Chen		15, 16
	Overall Outcome				1-16

REVERSED